



## PHENIX TEST PROCEDURE FOR TOF LASER IN BLDG. 810

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procedure name

**PHENIX Procedure No. PP-2.5.2.8-01**

**Revision: A**

**Date: July 2, 1998**

### **Hand Processed Changes**

**HPC No.**

**Date**

**Page Nos.**

**Initials**

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### **Approvals**

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PHENIX S E & I    Date

\_\_\_\_\_  
Cognizant Scientist/Engineer    Date  
/Activity Manager

\_\_\_\_\_  
PHENIX QA/Safety    Date

\_\_\_\_\_  
RHIC ES&H    Date

## REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	Current Oversight
A	First Issue- Actually a memo given a procedure number	6/29/1998 (memo date) Number applied to 2 <sup>nd</sup> memo after 7/2/1998	H. Sako to C. Weilandics	n/a	n/a
RETIRED	Procedure for lab test in lab. Tests completed , laser now installed at PHENIX. New Procedure: PP-2.5.2.9-04 rev A currently in place for laser operation.	3/6/2007	D. Lynch	D. Lynch, P. Gianotti, R. Pisani for the PHENIX experiment	D. Lynch

# TOF LASER PROCEDURE

**Subject:** laser operation memo

**Date:** Thu, 02 Jul 1998 11:43:13 -0400

**From:** Chris Weilandics <weilandi@mail.sep.bnl.gov>

**To:** sako@sgs0.hirg.bnl.gov

**CC:** wlenz@bnlarp.bnl.gov

pp-2.5.7.8-01

Hiro/Bill,

Below is a copy of the memo, please let me know if there are any errors or problems with it. Thanks, Chris

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Date: Jul. 2, 1998

To: H. Sako

From: C. Weilandics - LSO

Subject: Phenix TOF lab laser

The above laser is a Laser Science, Inc., VSL-337ND class IIIB nitrogen laser to be used by the Phenix TOF group in Bldg. 510. It is understood that the above laser is to be a totally enclosed (except for tune-up/alignment) laser system which, once set up, is designed to be operated as essentially a turn-key system. The laser itself will be housed in a wooden box which is expected to be interlocked. The output of the laser (250 uJ max. per pulse, 1-20 Hz, typically 10) will be focused onto a bundle of 37-600mm diameter fibers. Each of these fibers will then branch into 37-200mm fibers. The entire setup will be used to test the fiber optic connections for scintillator/PMT units and will be housed in a tent structure located in the Bldg. 510 high bay area.

You are assigned as the owner/operator and will be responsible for maintaining control over the area. A sign is to be placed on the entrance door to the tent which I can provide. There is to be no unattended operation of the laser. When the laser is operated with all of the fiber optics connected and the laser enclosed, it is a class I system. Connections of the fiber optics should be made with the beam terminated

While it is not necessary to post the entrance to the tent when the system is operated totally enclosed, it is probably a good idea to post the entrance door at all times the laser is operating in the event work on the laser (open beam) becomes necessary. This sign should be removed when the laser is not in operation. Within the small interlocked enclosure around the laser and focusing optics, it is possible to have a hazardous direct beam exposure. This enclosure is therefore a class IIIB controlled area and the following guidelines apply when the optics are being worked on (box open) as in tune-up/alignment:

1. the area around the laser (the tent enclosure) is to be posted so as to establish the controlled area and to keep unauthorized personnel out (i.e. doors posted).
2. safety glasses which have an optical density of 1 @ 337 nm are to be worn when working with the laser beam. These will afford the necessary protection from the beam.
3. The laser must be operated by qualified and authorized personnel. Persons who may be exposed to the open beam must have the requisite eye exams.

Please keep me informed as to the changes in the status of the lasers' location, output characteristics, configuration, user status (additions/deletions) etc.. It is understood that his system will be operated in the Bldg. 510 high bay area tent. If it becomes necessary or desirable to move this laser to a different location, or change the conditions described in this memo, the operation will need to be reassessed.

IH5520.98

cc:

K. Einfeldt  
R. Gill  
R. Selvey  
J. Vignola  
C. Woody  
F. Zafonte

**Subject: Re: Laser setup in 510c high bay**

**Date:** Mon, 29 Jun 1998 23:35:15 EDT

**From:** Hiroyuki Sako <sako@sgs0.hirg.bnl.gov>

**To:** Chris Weilandics <weilandi@mail.sep.bnl.gov>

**CC:** Hiroyuki Sako <sako@sgs0.hirg.bnl.gov>, wlenz@bnlarp.bnl.gov

Dear Chris,

Thank you for your mail and sorry for this late reply.  
I will include here reply to you and also our test procedure in the bottom. I am not sure how detail information you want to know, and also we actually do not know the detailed procedure yet. Please let me know if you need further information.

Best regards,  
H. Sako

>I would like to know (my notes are not clear) the output of the laser energy  
>per pulse, pulse repetition frequency, size of the beam. My recollection  
>was that the beam out of the laser would be expanded to about 5 mm onto a  
>bundle of about 30-200 micron fibers, and the output from each fiber would  
>be directed into a scintillator.

Energy per pulse : 150 - 250 uJ  
Repetition rate : 1 - 20 Hz  
Beam size : 40 mm2

We connect the 1st bundle and the 2nd bundle in serial.  
The laser beam was put onto the input of the 1st bundle, and  
we put the output of the 2nd bundle onto the scintillators.

The 1st bundle has 37 output fibers with 600 um diameter, and  
the 2nd bundle has 37 output fibers with 200 um diameter.

===== Test Procedure =====

Laser test procedure in PHENIX-TOF lab. in High Bay area in Bldg. 510.

1) Test purpose

To check optical fiber connections for 1000 scintillator slats with 2000 PMT's.

2) Setup

N2 laser (Class IIIb)  
Rail for the lense stands  
Aluminum base for the laser and the rail  
First stage fiber bundle  
Second stage fiber bundles

3) Operation procedure

i) Install the second bundle inside the TOF panel and connect output fibers to each scintillator slat

ii) Install the first bundle inside the black box and set the input window on the optical stand, and connect one of the output fiber to the input of the second bundle

iii) Turn on the N2 laser

iv) Align the laser, the rail, and lenses and input window of the first bundle inside the black box

- v) Close the cover of the black box
- vi) Connect HV/signal cables from PMT bleeders to the oscilloscope
- vii) Turn the high voltage of the PMT bleeders on
- viii) See signal on the oscilloscope